

Claims

1. A method for the quantification of beta amyloid peptide comprising
 - (a) providing a source of beta amyloid
 - (b) adding a defined amount of beta amyloid peptide labeled with a stable isotope to the source of (a)
 - (c) isolating unlabeled and labeled beta amyloid
 - (d) preparing the isolated beta amyloid for analysis by mass spectrometry
 - (e) analysing the prepared beta amyloid peptide by mass spectrometry, and
 - (f) determining the amount of beta amyloid that was present in the source of beta amyloid.
2. The method according to claim 1, wherein the source of beta amyloid in step (a) are amyloid deposits obtained from a tissue sample.
3. The method according to claim 2, wherein the amyloid deposits are obtained from a tissue sample by excision by laser dissection microscopy.
4. The method according to claim 2, wherein the beta amyloid peptide quantified is the beta amyloid content in amyloid deposits containing aggregated beta amyloid.
5. The method according to claim 1, wherein the source of beta amyloid in step (a) is body fluid.
6. The method according to claim 5, wherein the beta amyloid peptide quantified is the beta amyloid content in body fluid containing soluble beta amyloid.
7. The method according to claim 1, wherein the beta amyloid peptide quantified are amino terminal microheterogenous forms of beta amyloid.
8. The method according to claim 1, wherein the beta amyloid peptide quantified are carboxy terminal microheterogenous forms of beta amyloid.

9. The method according to claim 1, wherein the labeled beta amyloid added in step (b) is a beta amyloid which is recombinantly produced and labeled with at least one stable isotope.

10. The method according to claim 1, wherein the labeled beta amyloid added in step (b) is a beta amyloid which is synthetically produced and labeled with at least one stable isotope.

11. The method according to claim 1, wherein the beta amyloid added in step (b) is labeled with a stable isotope selected from the group comprising ^{15}N , ^{13}C , ^{18}O and ^2H .

12. The method according to claim 1, wherein the beta amyloid in step (c) is isolated from body fluid by methods comprising protein chemistry and immunochemistry.

13. The method according to claim 1, wherein the beta amyloid in step (c) is isolated from amyloid deposits by methods comprising dissolution with solubilizing agents.

14. The method according to claim 1, wherein the isolated beta amyloid in step (d) is prepared for analysis by mass spectrometry by methods comprising chemical reactions with flight enhancers, chemical fragmentation and enzymatic digestion.

15. The method according to claim 14, wherein the isolated beta amyloid in step (d) is prepared for analysis by mass spectrometry by enzymatic digestion with a protease selected from the group comprising endoproteinase Lys-C, trypsin, and endoproteinase Glu-C.

16. The method according to claim 1, wherein the prepared beta amyloid in step (e) is desalted before analysis by mass spectrometry.

17. The method according to claim 1, wherein the prepared beta amyloid in step (e) is analysed by MALDI-TOF mass spectrometry.

18. A method for the quantification of beta amyloid peptide comprising

- (a) providing excised amyloid deposits from mammalian brain samples containing aggregated beta amyloid
- (b) adding a defined amount of beta amyloid peptide labeled with a stable isotope
- (c) dissolving the excised aggregated beta amyloid in the presence of the labeled beta amyloid
- (d) digesting the dissolved beta amyloid with a protease
- (e) analysing the digested beta amyloid peptide mixture by mass spectrometry, and
- (f) determining the amount of beta amyloid that was present in the source of aggregated beta amyloid with the help of the base-line separation resulting from the presence of the natural and the stable isotopes in the beta amyloid.

19. The method according to claim 18, wherein the beta amyloid peptide quantified is the beta amyloid content in amyloid deposits containing aggregated beta amyloid.

20. The method according to claim 18, wherein the beta amyloid peptide quantified is the beta amyloid content in body fluid containing soluble beta amyloid.

21. The method according to claim 18, wherein the beta amyloid peptide quantified are amino terminal microheterogenous forms of beta amyloid.

22. The method according to claim 18, wherein the beta amyloid peptide quantified are carboxy terminal microheterogenous forms of beta amyloid.